

**WE CLAIM:**

1           1. A method of preparing styrene or substituted  
2     styrene comprising:

3           (a) converting a mixture comprising alkylbenzene  
4     hydroperoxide or substituted alkylbenzene hydroperoxide  
5     and an alkene to a mixture comprising phenyl alkanol or  
6     substituted phenyl alkanol and an alkylene oxide in the  
7     presence of a heterogeneous catalyst; and

8           (b) dehydrating the phenyl alkanol or substituted  
9     phenyl alkanol or substituted phenyl alkanol in the  
10    presence of a homogeneous dehydration catalyst to obtain  
11    styrene or substituted styrene.

1           2. The method of claim 1, which is preceded by a  
2     non-catalyzed step wherein alkylbenzene or substituted  
3     alkylbenzene is oxidized to a mixture comprising  
4     alkylbenzene hydroperoxide or substituted alkylbenzene  
5     hydroperoxide.

1           3. The method of claim 1 in which the  
2     alkylbenzene hydroperoxide comprises ethylene  
3     hydroperoxide and the phenyl alkanol comprises 1-  
4     phenylethanol.

1           4. The method of claim 3 in which the  
2     heterogeneous catalyst is selected from the group  
3     consisting of supported titanium compounds, zirconium  
4     compounds, molybdenum compounds, vanadium compounds, and  
5     the homogeneous catalyst is selected from the group  
6     consisting of inorganic acids and organic compounds.

1           5. The method of claim 1 in which the  
2     heterogeneous catalyst comprises titanium on silica, and  
3     the homogeneous catalyst comprises an aromatic and/or  
4     sulfonic acid.

1                   6. The method of claim 5, in which the  
2 homogeneous catalyst comprises p-toluene sulfonic acid.